

REMARKS/ARGUMENTS

STATUS OF CLAIMS

Claims 1-20 are currently pending in this application. By this Amendment, claims 1 and 17 are amended, leaving claims 2-16 and 18-20 unchanged. The Applicants appreciate the Examiner's acknowledgement that claims 4, 6, 7, 15, and 20 contain allowable subject matter.

CLAIM REJECTIONS – 35 U.S.C. §103

On pages 2-4 of the Office Action, claims 1-3, 5, 11, 12, and 17-19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chu et al. (U.S. Patent No. 6,223,810) in view of Khrustalev et al. (U.S. Patent No. 6,536,510).

Claim 1 is hereby amended, and calls for:

A capillary assisted loop thermosiphon apparatus comprising:
at least one evaporator connected by a vapor line to a condenser, the vapor line comprising a tube having a first end connected to the evaporator and a second end connected to the condenser;
a liquid line connecting the condenser and the evaporator, the liquid line comprising a tube having a first end connected to the condenser and a second end connected to the evaporator;
the evaporator has a height in a direction of gravity significantly greater than a width perpendicular to the height, and is positioned in the direction of gravity from the condenser such that the condenser supplies liquid under gravity induced pressure to the evaporator, and the evaporator has a vertical capillary wick in which liquid wicks in the direction of gravity, wherein the liquid flow through the wick of the evaporator from the inlet to the outlet is substantially vertical.

(Amendment marks not shown)

Claim 17 is also hereby amended, and calls for:

A capillary assisted loop thermosiphon apparatus comprising:
at least one evaporator connected by a vapor line to a condenser, the vapor line comprising a tube having a first end connected to the evaporator and a second end connected to the condenser;
a liquid line connecting the condenser and the evaporator, the liquid line comprising a tube having a first end connected to the condenser and a second end connected to the evaporator;
the evaporator is positioned in the direction of gravity from the condenser such that the condenser supplies liquid under gravity induced pressure to the evaporator; and
the evaporator has a height in a direction of gravity significantly greater than a width perpendicular to the height, and has at least a pair of sheets, with at least one of the sheets having a corresponding wick portion attached thereto to provide a vertical capillary wick in which liquid wicks in the direction of gravity, wherein the liquid flow through the wick of the evaporator from the inlet to the outlet is substantially vertical.
(Amendment marks not shown)

In contrast, Chu et al. disclose a thermosiphon system in which liquid phase coolant enters the evaporator 20 via the liquid line 50 at the lower portion of the evaporator such that an electronic module 70 is cooled by boiling action of the coolant within the evaporator. (Chu et al., Col. 4, lines 43-56). Thus, Chu et al. fail to teach, describe, or suggest, among other things, a capillary assisted loop thermosiphon apparatus including vapor and liquid lines connecting the evaporator to a condenser, wherein the evaporator has a height in a direction of gravity significantly greater than a width, and has a vertical capillary wick in which liquid wicks in the direction of gravity and in which liquid flow through the wick from the inlet to the outlet of the evaporator is substantially vertical, as claimed in amended claims 1 and 17.

Khrustalev et al. fail to cure the deficiencies of Chu et al., and are only cited to disclose the use of a wick in an evaporator of a thermosiphon. Specifically, Khrustalev et al. fail to teach, describe, or suggest, among other things, a capillary assisted loop thermosiphon apparatus including vapor and liquid lines connecting the evaporator to a condenser, wherein the evaporator has a height in a direction of gravity significantly greater than a width, and has a vertical capillary wick in which liquid wicks in the direction of gravity and in which liquid flow

through the wick from the inlet to the outlet of the evaporator is substantially vertical, as claimed in amended claims 1 and 17.

In light of these and other reasons not discussed herein, the Applicants respectfully submit that amended claims 1 and 17 are novel and non-obvious over Chu et al. and Khrustalev et al. Withdrawal of the 35 U.S.C. §103(a) rejection of claims 1 and 17 is therefore respectfully requested.

Claims 2, 3, 5, 11, and 12 each depend from amended claim 1, and are therefore allowable based upon independent claim 1 and upon other elements and features claimed in claims 2, 3, 5, 11, and 12 but not discussed herein. Also, claims 18 and 19 each depend from amended claim 17, and are therefore allowable based upon independent claim 17 and upon other elements and features claimed in claims 18 and 19 but not discussed herein. Withdrawal of the 35 U.S.C. §103(a) rejection of claims 2, 3, 5, 11, 12, 18, and 19 in view of Chu et al. and Khrustalev et al. is therefore respectfully requested.

On pages 2 and 4 of the Office Action, claims 8-10, 13, 14, and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chu et al. in view of Khrustalev et al., and further in view of Marcus et al. (U.S. Patent No. 4,046,190).

Claims 8-10, 13, 14, and 16 each depend from claim 1, and are therefore allowable based upon independent claim 1 and upon other elements and features claimed in claims 8-10, 13, 14, and 16 but not discussed herein. Withdrawal of the 35 U.S.C. §103(a) rejection of claims 8-10, 13, 14, and 16 in view of Chu et al., Khrustalev et al., and Marcus et al. is therefore respectfully requested.

CONCLUSION

In view of the above, the Applicants respectfully request entry of this Amendment and reconsideration of pending claims 1-20 in light of the above remarks. The Applicants also request that the Examiner contact the undersigned attorney of record in the event such a call could advance prosecution of the present application.

Respectfully submitted,



Christopher B. Austin
Reg. No. 41,592

Michael Best & Friedrich LLP
100 East Wisconsin Avenue
Suite 3300
Milwaukee, Wisconsin 53202-4108
414.271.6560